

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Gold, S.

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TITLE: GATEWAY DEVICE FOR REMOTE FILE SERVER SERVICE

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Assistant Commissioner For Patents
Washington, D.C. 20231

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Allison B. Derkman
Name

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Signature

PRELIMINARY AMENDMENT

Dear Sir:

Please amend the application as follows:

IN THE ABSTRACT OF THE DISCLOSURE

Please amend the Abstract as follows:

A bulk data repository for remote storage of bulk data from a plurality of computer networks is accessed over a plurality of communications links. Each computer network is provided with a gateway appliance which emulates a file system by packaging data files for transmission over the communications link to the data repository, each data file having appended a meta data header, which designates an address of the gateway appliance. The data repository receives the data file with the meta data header and stores the meta data header locally in a local database prior to filing the data file. The data repository can search the meta data header to locate any of the data files of a gateway appliance. The data repository has automatic management tools for monitoring the amount of data storage space allocated to any gateway appliance, and for expanding the allocated data storage space if required.

IN THE CLAIMS

Please amend the claims as follows:

1. (Amended) A method of storing user data of a plurality of network computer entities, said method comprising:

writing said user data to a local data storage area in an individual one of said plurality of network computer entities;

creating emulation data which emulates a file system type in use in said network;

incorporating said user data and said file system type data in a data file for transmission; and

transmitting said transmission file over a communications link for remote data storage.

3. (Amended) The method as claimed in claim 1, wherein transmitting said transmission file comprises transmitting a plurality of modified portions of user files which have changed since a last transmission event.

4. (Amended) The method as claimed in claim 1, wherein transmitting occurs at predetermined intervals, and writing said user data comprises caching said user data in said local data storage device between file transmission events.

5. (Amended) The method as claimed in claim 1, wherein said user data is cached in a file at said local data storage area in a file system independent format; and

periodically, a portion of said file which is changed compared to a previously transmitted version of said file is transmitted over said communications link for remote data storage.

6. (Amended) The method as claimed in claim 1, wherein said transmission file comprises a block of a user data file representing incremental changes of said user data file, and said changes of said user data file are received in compressed format, said method further comprising:

decompressing said changed block of user data;

decompressing a received full said transmission file;

combining said decompressed changed block of user data;

decompressing said full transmission file;

updating said full transmission file by incorporating said changed block of user data to obtain an updated data file; and

recompressing said updated data file.

7. (Amended) The method as claimed in claim 1, further comprising prior to transmitting said transmission file over said communications link, compressing and encrypting said transmission file.

8. (Amended) The method as claimed in claim 1, further comprising:

maintaining said data file for transmission in said computer entity in which said user data is written to a local data storage area;

receiving an incremental change to said user data file;

modifying said user data file by incorporation of said incremental change prior to transmitting said transmission file over said communications link for remote data storage.

9. (Amended) The method as claimed in claim 1, further comprising:

receiving from said remote data storage location:

a compressed encrypted package representing a user data file; and

one or more compressed encrypted packages representing updates to said user data file;

decompressing and decrypting said received package representing said user data file;

decompressing and decrypting each of said one or more packages representing updates of said user data file; and

combining said user data file with said updates of said user data file to obtain an updated user data file, reconstituted from said data packages received from said remote data storage device.

10. (Amended) A method of preparing data originating from a plurality of networked computer entities into a format suitable for remote storage, said method comprising:

assembling a file of user data to be remotely stored;

assembling header data, said header data comprising:

address data identifying an address of a device from which said data is sent;

file system type data identifying a file system type which is used by the device from which the data is sent;

access control data describing at least one category of user who is authorized to access said user data files;

timing data identifying a time associated with said user data file; and

appending said header data to said user data file to create a transmission file comprising said user data file and said header data.

11. (Amended) The method as claimed in claim 10, wherein said file system type data comprises:

identifier data identifying an address of said device originating said data;

network settings data specifying internal network settings of a computer network from which said data originates; and

emulation file system configuration data, describing an internal set-up of a gateway device sending said data, said set up data describing how said gateway device emulates a file server system.

12. (Amended) The method as claimed in claim 10, further comprising:

storing said file system type data at a remote storage device, remote from an individual one of said plurality of networked computer entities originating said transmission file.

13. (Amended) The method as claimed in claim 10 further comprising:

transmitting to a remote data storage facility stored configuration data including customer-specific gateway appliance settings, arranged to configure a gateway appliance according to a specific customer requirement.

14. (Amended) A gateway appliance for sending data to and receiving data from a remote data storage location accessible over a communications link, said gateway appliance comprising:

a data processor;

a first communications port for communicating with a plurality of computers in a computer network;

a second communications port for communicating with a remote data storage facility;

a non-volatile data storage device for storing locally, data to be communicated via said second communications port;

means for emulating a file system corresponding to a file system of a network of computer entities;

means for converting data between a file system dependent format and a file system independent format; and

means for converting said data between a compressed format and an uncompressed format.

15. (Amended) The gateway appliance as claimed in claim 14, wherein said means for emulating a file system operates to create emulation data which emulates a

file system type of a network of computer entities, in a format suitable for incorporating with a user data file for transmission to a remote data storage device.

17. (Amended) A bulk data storage facility comprising:

a plurality of data storage devices;

a plurality of file servers configured for storing data in said plurality of data storage devices;

a plurality of gateway devices providing external connectivity to said plurality of file servers and adapted to receive packets of incoming data;

means to allocate said plurality of incoming data packets to data storage space in said plurality of data storage devices; and

database means for recording a data location of each said plurality of data packets in said plurality of data storage devices.

19. (Amended) The bulk data storage facility as claimed in claim 17, further comprising:

means for monitoring how much data storage space is allocated to each of a plurality of customers.

20. (Amended) The bulk data storage facility as claimed in claim 17, further comprising means for calculating a monetary cost of a data storage space allocated to each of a plurality of customers.

21. (Amended) A method of providing data storage to a plurality of customers at a bulk data storage repository, said method comprising:

receiving packages of data from each of said plurality of customers;

allocating to each of said plurality of customers at least one block of data storage space;

allocating to each of said received packages of data a file location in said data storage space;

allocating to each of said packages a file name; and

storing said file name in a database, said database identifying said file location in said data repository associated with said data packet.

22. (Amended) The method as claimed in claim 21, further comprising:

reading policy data from a policy database containing policy data governing allocation of data storage space to each of said plurality of customers;

determining if storage of said received package in a data block allocated to an individual one of said plurality of customers would exceed an allowed data storage capacity of said individual one; and

increasing said data block allocated to a said individual one.

23. (Amended) The method as claimed in claim 21, further comprising:

reading policy data from a policy database containing a policy data governing allocation of data storage space to each of said plurality of customers;

determining if storage of said received package in a data block allocated to a said customer would exceed an allowed data storage capacity of an individual one of said plurality of customers; and

if storage of said data package would exceed said predetermined data block size allocated to said individual one, overwriting said received package.

Remarks

Claims 1-24 remain in the application.

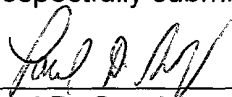
The Abstract has been amended to eliminate reference numbers and to comply with the requirements of MPEP 608.01(b)

Claims 1, 2-15, 17, and 19-23 have been amended to eliminate reference numbers, multiple dependencies, the phrase "the steps of," and to eliminate any lack of antecedent basis.

As such, claims 1, 2-15, 17, and 19-23 have been clarified by amendment above for purposes of form. It is respectfully submitted that the amendments to claims 1, 2-15, 17, and 19-23 are neither narrowing nor made for substantial reasons related to patentability as defined by the Court of Appeals for the Federal Circuit (CAFC) in Eesto Corporation v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd., 95-1066 (Fed. Cir. 2000). Therefore, the amendments to claims 1, 2-15, 17, and 19-23 do not create prosecution history estoppel and, as such, the doctrine of equivalents is available for all of the elements of claims 1, 2-15, 17, and 19-23.

Attached hereto is a marked up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version With Markings to Show Changes Made."

Respectfully submitted,



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8-3-01
Date

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE ABSTRACT OF THE DISCLOSURE

Please amend the Abstract as follows:

A bulk data repository [201] for remote storage of bulk data from a plurality of computer networks [200-207] is accessed over a plurality of communications links[, e.g., the Internet 202]. Each computer network is provided with a gateway appliance [200, which acts as a virtual filing system for a plurality of computer entities on a computer network. Gateway appliance] which emulates a file system[, for example Windows NT® or Novell NetWare®] by packaging data files [to be stored in files] for transmission over the communications link[ed] to the data repository, each data file having appended a meta data header, which designates an address of the gateway appliance [and a type of file system which the gateway appliance is emulating]. The data repository receives the data file with the meta data header and stores the meta data header locally in a local database prior to filing the data file [in a block of data reserved for the gateway appliance]. The data repository can search [data files by searching] the meta data header to locate any of the data files of a gateway appliance. The data repository has automatic management tools for monitoring the amount of data storage space allocated to any gateway appliance, and for expanding the allocated data storage space if required.

IN THE CLAIMS

Please amend the claims as follows:

1. (Amended) A method of storing user data of a plurality of network computer entities, said method [characterized by] comprising [the steps of]:

writing said user data to a local data storage area [(1001)] in [a] an individual one of said plurality of network computer [entity] entities;

creating [an] emulation data which emulates a file system type in use in said network;

incorporating said user data and said file system type data in a data file for

transmission; and

transmitting said transmission file over a communications link for remote data storage.

3. (Amended) The method as claimed in claim 1 [or 2], wherein [said step of] transmitting [a] said transmission file comprises transmitting a plurality of modified portions of user files which have changed since a last transmission event.

4. (Amended) The method as claimed in claim 1, wherein [said step of transmission] ~~transmitting~~ occurs at predetermined intervals, and [said step of] writing ~~said~~ user data comprises caching said user data in said local data storage device between file transmission events.

5. (Amended) The method as claimed in claim 1, wherein said user data is cached in a file at said local data storage area [(1001)] in a file system independent format; and

periodically, a portion of said file which is changed compared to a previously transmitted version of said file is transmitted over said communications link for remote data storage.

6. (Amended) The method as claimed in claim 1, wherein [a] said transmission file comprises a block of a user data file representing incremental changes of said user data file, and said changes of said user data file are received in compressed format, [and] ~~said method~~ further comprising [the steps of]:

decompressing said changed block of user data;

decompressing a received full said transmission file;

combining said decompressed changed block of user data;

decompressing said full transmission file;

updating said full transmission file by incorporating said changed block of user data to obtain an updated data file; and

recompressing said updated data file.

7. (Amended) The method as claimed in claim 1, [wherein] further comprising prior to [said step of] transmitting said transmission file over said communications link, compressing and encrypting said transmission file [is compressed and encrypted].

8. (Amended) The method as claimed in claim 1, further comprising [the step of]:

maintaining said data file for transmission in said computer entity in which said user data is written to a local data storage area;

receiving an incremental change to said user data file;

modifying said user data file by incorporation of said incremental change [data] prior to [said step of] transmitting said transmission file over said communications link for remote data storage.

9. (Amended) The method as claimed in claim 1, further comprising [the steps of]:

receiving from said remote data storage location:

a compressed encrypted package representing a user data file; and

one or more compressed encrypted packages representing updates to said user data file;

decompressing and decrypting said received package representing [a] said user data file;

decompressing and decrypting each of said one or more packages representing [an] updates of said user data file[s]; and

combining said user data file with said updates of said user data file to obtain an updated user data file, reconstituted from said data packages received from said remote data storage device.

10. (Amended) A method of preparing data originating from a plurality of networked computer entities into a format suitable for remote storage, said method [characterized by] comprising [the steps of]:

assembling a file of user data to be remotely stored;

assembling [a] header data [(1102)], said header data comprising:

[an] address data [(401)] identifying an address of a device from which said data is sent;

[a] file system type data [(400)] identifying a file system type which is used by the device from which the data is sent;

[an] access control data [(404)] describing at least one category of user who is authorized to access said user data files;

[a] timing data [(405)] identifying a time associated with said user data file; and

appending said header data [(1103)] to said user data file to create a transmission file comprising said user data file and said header data.

11. (Amended) The method as claimed in claim 10, wherein said file system type data comprises:

[an] identifier data [(1200)] identifying an address of said device originating said data;

[a] network settings data [(1201)] specifying internal network settings of [said] a computer network from which said data originates; and

[an] emulation file system configuration data [(1202)], describing an internal set-up of a gateway device sending said data, said set up data describing how said gateway device emulates a file server system.

12. (Amended) The method as claimed in claim 10, further comprising [the step of]:

storing said file system type data at a remote storage device, remote from [a said] an individual one of said plurality of networked computer [entity] entities originating said transmission file.

13. (Amended) The method as claimed in claim 10 further comprising [the steps

of]:

transmitting to a remote data storage facility stored configuration data including customer-specific gateway appliance settings, arranged to configure a [said] gateway appliance according to a specific customer requirement.

14. (Amended) A gateway appliance for sending data to and receiving data from a remote data storage location accessible over a communications link, said gateway appliance [characterized by] comprising:

a data processor [(1002)];

a first communications port [(1004)] for communicating with a plurality of computers in a computer network;

a second communications [(1005)] port for communicating with a remote data storage facility;

a non-volatile data storage device [(1001)] for storing locally, data to be communicated via said second communications port;

means [(1001)] for emulating a file system corresponding to a file system of a network of computer entities;

means for converting data between a file system dependent format and a file system independent format; and

means for converting said data between a compressed format and an uncompressed format.

15. (Amended) The gateway appliance as claimed in claim 14, wherein said means [(1001)] for emulating a file system operates to create [an] emulation data which emulates a file system type of a network of computer entities, in a format suitable for incorporating with a user data file for transmission to a remote data storage device.

17. (Amended) A bulk data storage facility comprising:

a plurality of data storage devices [(500, 601)];

a plurality of file servers [(501, 602)] configured for storing data in said plurality of data storage devices;

a plurality of gateway devices [(502, 603)] providing external connectivity to said plurality of file servers and adapted to receive packets of incoming data;

[said bulk data storage facility characterized by comprising:]

means [(604)] to allocate said plurality of incoming data packets to data storage space in said plurality of data storage devices; and

database means [(1301)] for recording a data location of each said plurality of data packets in said plurality of data storage devices.

19. (Amended) The bulk data storage facility as claimed in claim 17, further [comprises] comprising:

means [(1302)] for monitoring how much data storage space is allocated to each of a plurality of customers.

20. (Amended) The bulk data storage facility as claimed in claim 17, further comprising means [(1303)] for calculating a monetary cost of a data storage space allocated to each of a plurality of customers.

21. (Amended) A method of providing data storage to a plurality of customers at a bulk data storage repository, said method [characterized by] comprising [the steps of]:

receiving packages of data from each of said plurality of customers;

allocating [(800)] to each of said plurality of customers at least one block of data storage space;

allocating to each of said received packages of data a file location in said data storage space;

allocating to each of said packages a file name; and

storing [(802, 1407)] said file name in a database, said database identifying said file location in said data repository associated with said data packet.

22. (Amended) The method as claimed in claim 21, further comprising [the step of]:

reading [a] policy data [(1400)] from a policy database containing policy data governing allocation of data storage space to each of [a] said plurality of customers;

determining [(1402)] if storage of said received package in a data block allocated to [a] an individual one of said plurality of customers would exceed an allowed data storage capacity of said individual one [customer]; and

increasing [(1405)] said data block allocated to a said individual one [customer].

23. (Amended) The method as claimed in claim 21, further comprising [the step of]:

reading [a] policy data [(1400)] from a policy database containing a policy data governing allocation of data storage space to each of [a] said plurality of customers;

determining if storage of said received package in a data block allocated to a said customer would exceed an allowed data storage capacity of an individual one of said plurality of customers [(1403)]; and

if storage of said data package would exceed said predetermined data block size allocated to said individual one [customer], overwriting said received package.